Treatment of Industrial Wastewater using Eichornia Crassipes, Pistia stratiotes and Salvinia Molesta in Phytogreen System

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ABSTRACT
This work shows a study to investigate the effectiveness of Eichornia Crassipes sp., Pistia Stratiotes sp.and Giant Salvinia sp.to be used in the phytoremediation technology and their potential as the heavy metals removal in root zone via phytogreen system. This study is being applied to the industrial wastewater that contains heavy metals. Heavy metals content can cause many effect to human health. It is important to treat the wastewater before it is discharge into the water system. Thus, a new technology based on environmental friendly and economic are required. Phytoremediation concept is the best technology to be used in order to solve the water pollutant. This study focused on the use of the root zone in order to clean up the pollutants. The length of the root being measured and the water quality is being analyzed every week for 2 months durations according to 9 parameters referred to Standard Examination of Water and Wastewater by American Public Health Associate (APHA, 2002) .There are Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Dissolved Oxygen (DO), pH, Turbidity, Oil and Grease (O&G), Iron (Fe), Nitrate (NO2) and Nitrite (NO3). Analysis of data was performed by using a 1-way analysis of variance (1-way ANOVA). Eichornia Crassipes sp. is the most effective among them with Fe percentage removal of 139.4% and followed by Water Lettuce at 137% and Giant Salvinia 102%. Its root zone also growth faster and continuously compare to others and proved that the contaminant is successfully absorbed by the root in order to stabilize the industrial wastewater.

KEYWORDS: Eichornia Crassipes sp.; Pistia Stratiotes sp.; Giant Salvinia sp.; Phytoremediation; Industrial wastewater; Phytogreen system